

# Notice of Allowability

Application No.

10/723,424

Examiner

Timothy C. Vanoy

Applicant(s)

HAMPDEN-SMITH ET AL.

Art Unit

1754

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on May 3, 2006.
2. ☒ The allowed claim(s) is/are 1-98.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

Timothy Vanoy  
Timothy Vanoy  
Primary Examiner  
Tech Center 1700

### REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: Claim 1 and the claims dependent thereon have been allowed because none of the references of record teach or suggest the claimed method for converting a carbon-based fuel to a hydrogen-rich product gas, comprising the steps:

- (a) providing a carbon-based fuel;
- (b) converting said carbon-based fuel to an intermediate gas product by contacting said carbon-based fuel with at least a first conversion catalyst;
- (c) contacting said intermediate gas product with an absorbent material to absorb carbon dioxide and form a hydrogen-rich gas, said absorbent material having a theoretical absorption capacity for carbon dioxide;
- (d) extracting said hydrogen-rich gas from said contacting step;
- (e) regenerating said absorbent; and
- (f) repeating said steps (a), (b), (c), (d) and (e) at least 10 times, wherein said absorbent material retains at least about 50 mole percent of said theoretical absorption capacity after each of said repeating steps.

Claim 29 and the claims dependent thereon have been allowed because none of references of record teach or suggest the claimed method for converting a carbon-based fuel to a hydrogen-rich product gas, comprising the steps:

- (a) providing a carbon-based fuel;
- (b) converting said carbon-based fuel to an intermediate gas product by contacting said carbon-based fuel with at least a first conversion catalyst;

(c) contacting said intermediate gas product with an absorbent material having a mass to absorb carbon dioxide and form a hydrogen-rich gas, said absorbent material having a theoretical absorption capacity for carbon dioxide;

(d) extracting said hydrogen-rich gas from said contacting step;

(e) regenerating said absorbent; and

(f) repeating said steps (a), (b), (c), (d) and (e) at least 10 times, wherein said mass of absorbent material retains at least about 10 grams of carbon dioxide per 100 grams unreacted absorbent after each of said repeating steps.

Claim 62 and the claims dependent thereon have been allowed because none of the references of record teach or suggest the claimed method for converting a carbon-based fuel to a hydrogen-rich gas, comprising:

(a) providing a carbon-based fuel and steam;

(b) converting said carbon-based fuel and said steam to an intermediate gas product by contacting with at least a first conversion catalyst;

(c) contacting said intermediate gas product with an absorbent material to absorb carbon dioxide and form a hydrogen-rich gas, said absorbent material having a theoretical absorption capacity and wherein at least said absorbent material is palletized;

(d) extracting said hydrogen-rich gas from said contacting step;

(e) regenerating said absorbent; and

(f) repeating said steps (a), (b), (c), (d) and (e) at least 50 times, wherein said absorbent material retains at least about 20 mole percent of its theoretical carbon dioxide absorption capacity after each of said repeating steps.

Claim 84 and the claims dependent thereon have been allowed because none of the references of record teach or suggest the claimed method for the absorption enhanced reforming of a carbon-based fuel, comprising:

- (a) providing a carbon-based fuel;
- (b) contacting said carbon-based fuel with at least a first conversion catalyst to catalyze the formation of an intermediate gas product;
- (c) contacting said intermediate gas product with a palletized absorbent compound having a first bulk density, wherein said palletized absorbent is converted to a carbonized absorbent having a second bulk density; and
- (d) regenerating said carbonized absorbent to form a regenerated absorbent having a third bulk density, wherein said third bulk density is greater than said first bulk density.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Timothy C Vanoy*  
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Primary Examiner  
Art Unit 1754

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